

CURRICULUM VITAE
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PERSONAL

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EDUCATION

1970-1974 St. John's College, Oxford University. B.A. (in Chemistry), 1974
1974-1980 Department of Chemistry, Harvard University. Ph.D. (in Bioorganic Chemistry), June 1980 (thesis advisor: Prof. J. R. Knowles)

PROFESSIONAL POSITIONS

1975-1976 Teaching Fellow, Chemistry department, Harvard
1976-1980 Departmental NMR Service Operator and Instructor, Harvard
1980-1982 Postgraduate Research Biochemist, Department of Biochemistry & Biophysics, University of California, San Francisco
1982-1984 Assistant Research Biochemist, UCSF
1984-1994 Assistant Professor, UCSF
1994-1998 Group Leader, Hepatitis, Virology Department, Bristol-Myers Squibb Research Institute, Wallingford, CT
1998-1999 Research Fellow, Virology Department, Schering Plough Research Institute, Kenilworth, New Jersey

1999-2000 Associate Director, Virology Department, Schering Plough Research Institute, Kenilworth, New Jersey

2000-2002 Executive Director of Research, Novirio Pharmaceuticals, Inc., Cambridge, Massachusetts

2002-2006 Vice President of Biology, Idenix Pharmaceuticals, Inc. (formerly Novirio Pharmaceuticals, Inc.), Cambridge, Massachusetts

2006-2007 Senior Vice President of Biology, Idenix Pharmaceuticals, Inc., Cambridge, Massachusetts

Dec 2007 Executive Vice President of Biology, Idenix Pharmaceuticals, Inc. Cambridge, Massachusetts

TEACHING EXPERIENCE

1975-1980 Teaching Fellow, Chemistry Department, Harvard Departmental NMR Service Operator and Instructor

1987-1989 Lecturer, basic biochemistry, School of Podiatry, S. F.

1990-1994 Lecturer, basic biochemistry, Schools of Dentistry & Pharmacy, U.C.S.F.

PROFESSIONAL AWARDS/HONORS/ACTIVITES

1974-1978 Scholarship to Harvard University

1992 Appointed Member, UCSF Liver Center

1993 Elected Organizer, Annual Molecular Biology of Hepatitis Viruses Meeting, held at U.C San Diego, July 23-26, 1995

1994-1995 Executive Committee Member, UCSF Liver Center

1995 Member, US-Japan Binational Hepatitis Panel

1996 President's Award, Bristol Myers Squibb. For contributions to the development of BMS-200475 (Entecavir) a new inhibitor of hepatitis B virus replication

1999 Member, NIH study section. RFA DK-98-017 on the Natural History, Prevention and Pathogenesis of Hepatitis C virus

1994 to Present Ad hoc reviewer for Journal of Virology, Virology, Gastroenterology now Hepatology, Journal of Hepatology,

Journal of Experimental Medicine, Journal of Infectious Diseases, Journal of Biological Chemistry, Nucleic Acids Research, Journal General Virology, Gene, Antiviral Agents and Chemotherapy, Antimicrobial Agents and Chemotherapy.

2007 to Present Member of the Scientific Organizing Committee for the International Workshop on Hepatitis C: Resistance and New Compounds

2007 to Present Member of the HCV Drug Resistance Advisory Group, part of the HIV forum.

SOCIETIES

American Society for Biochemistry and Molecular Biology

American Society for Microbiology

American Association for the Study of Liver Disease

CONSULTANCIES

1993-1995 Chiron Corporation, Emeryville, CA

1990, 1994 Genentech, South San Francisco, CA

SELECTED PUBLICATIONS

1. **Webb MR, Standring DN, and Knowles JR.** 1977. Phosphorus-31 nuclear magnetic resonance of dihydroxyacetone phosphate in the presence of triosephosphate isomerase. The question of nonproductive binding of the substrates hydrate. *Biochemistry* 16:2738-2741.
2. **Staros JV, Bayley JHP, Standring DN, and Knowles JR.** 1978. Reduction of aryl azides by thiols: implications for the use of photoaffinity reagents. *Biochem. Biophys. Res. Commun.* 80:568-572.
3. **Bayley H, Standring DN, and Knowles JR.** 1978. Propane-1,3-dithiol: a selective reagent for the efficient reduction of alkyl and aryl azides to amines. *Tet. Letts.* 39:3633-3634.
4. **Standring DN and Knowles JR.** 1980. Photoaffinity labeling of lactate dehydrogenase by the carbene derived from the three-diazirino analogue of nicotinamide adenine dinucleotide. *Biochemistry* 19:2811-2816.
5. **Standring DN, Venegas A, and Rutter WJ.** 1981. Yeast tRNA^{leu3} gene transcribed and spliced in a HeLa cell extract. *Proc. Nat. Acad. Sci. USA* 78:5963-5967.
6. **Quinto C, Quiroga M, Swain WF, Nikovits WCJ, Standring DN, Pictet RL, Valenzuela P, and Rutter WJ.** 1982. Rat preprocarboxypeptidase A: cDNA sequence and preliminary characterization of the gene. *Proc. Nat. Acad. Sci. USA* 79:31-35.
7. **Shaul Y, Standring DN, Ziemer M, Garcia P, Hsu H, Laub O, Rall L, Valenzuela P, and Rutter WJ.** 1983. Transcription and integration of hepatitis B virus, p. 67-70. In L. Overby, F. Deinhardt and J. Deinhardt (ed.), *Viral Hepatitis: second International Max von Pettenkofer Symposium*. Marcel Dekker, Inc., New York and Basel.
8. **Laub O, Rall LB, Truett M, Shaul Y, Standring DN, Valenzuela P, and Rutter WJ.** 1983. Synthesis of hepatitis B surface antigen in mammalian cell: expression of the entire gene and the coding region. *J. Virol.* 48:271-280.
9. **Standring DN, Rall LB, Laub O, and Rutter WJ.** 1983. Hepatitis B virus encodes an RNA polymerase III transcript. *Mol. Cell Biol.* 3:1774-1782.
10. **Rall LB, Standring DN, Laub O, and Rutter WJ.** 1983. Transcription of hepatitis B virus by RNA polymerase II. *Mol. Cell Biol.* 3:1766-1773.
11. **Standring DN, Rutter WJ, Varmus HE, and Ganem D.** 1984. Transcription of the hepatitis B virus surface antigen gene in cultured murine cells initiates within the presurface region. *J. Virol.* 50:563-571.

12. **Rutter WJ, Ziemer M, Ou J, Shaul Y, Laub O, Garcia P, and Standring DN.** 1984. Transcription units of hepatitis B virus genes and structure and expression of integrated viral sequences, p. 67-86. *In* G. L. Vyas, J. L. Dienstag and J. Hoofnagle (ed.), *Viral Hepatitis and Liver Disease*. Grune and Stratton, Orlando, Florida.
13. **Ebina Y, Edery M, Ellis L, Standring DN, Beaudoin J, Roth RA, and Rutter WJ.** 1985. Expression of a functional human insulin receptor from a cloned cDNA in Chinese hamster ovary cells. *Proc. Natl. Acad. Sci. USA* 82:8014-8018.
14. **Standring DN and Rutter WJ.** 1986. The molecular analysis of hepatitis B virus, p. 311-333. *In* H. Popper and F. Schaffner (ed.), *Progress in Liver Disease*. Grune and Stratton, Orlando, Florida.
15. **Standring DN, Ou JH, and Rutter WJ.** 1986. Assembly of viral particles in *Xenopus* oocytes: pre-surface antigens regulate secretion of the hepatitis B viral surface envelope particle. *Proc. Natl. Acad. Sci. USA* 83:9338-9342.
16. **Morgan DO, Edman JC, Standring DN, Fried VA, Smith MC, Roth RA, and Rutter WJ.** 1987. Insulin-like growth factor II receptor as a multifunctional binding protein. *Nature* 329:301-307.
17. **Standring DN, Ou JH, and Rutter WJ.** 1987. Expression of hepatitis B viral antigens in *Xenopus* oocytes. *UCLA Symp. Mol. Cell. Biol. New Series* 70:117-127.
18. **Standring DN, Ou JH, Masiarz FR, and Rutter WJ.** 1988. A signal peptide encoded within the precore region of hepatitis B virus directs the secretion of a heterogeneous population of e antigens in *Xenopus* oocytes. *Proc. Natl. Acad. Sci. USA* 85:8405-8409.
19. **Standring DN.** 1991. The molecular biology of the hepatitis B virus core protein, p. 145-169. *In* A. McLachlan (ed.), *Molecular biology of the hepatitis B virus*. CRC Press, Boca Raton, Florida.
20. **Zhou S and Standring DN.** 1991. Production of hepatitis B virus nucleocapsidlike core particles in *Xenopus* oocytes; assembly occurs mainly in the cytoplasm and does not require the nucleus. *J. Virol.* 65:5457-5464.
21. **Yang SQ, Walter M, and Standring DN.** 1992. Hepatitis B virus p25 precore protein accumulates in *Xenopus* oocytes as an untranslocated phosphoprotein with an uncleaved signal peptide. *J. Virol.* 66:37-45.
22. **Seifer M and Standring DN.** 1992. Improved sensitivity of detection of the hepatitis B virus capsid protein using an ELISA amplified by ELAST. *Biotech Update* (Dupont) 7:120-124.
23. **Zhou S, Yang SQ, and Standring DN.** 1992. Characterization of hepatitis B virus capsid particle assembly in *Xenopus* oocytes. *J. Virol.* 66:3086-3092.

24. **Zhou S and Standring DN.** 1992. Cys residues of the hepatitis B virus capsid protein are not essential for the assembly of viral core particles but can influence their stability. *J. Virol.* 66:5393-5398.

25. **Hatton T, Zhou S, and Standring DN.** 1992. RNA- and DNA-binding activities in hepatitis B virus capsid protein: a model for their roles in viral replication. *J. Virol.* 66:5232-5241.

26. **Zhou S and Standring DN.** 1992. Hepatitis B virus capsid particles are assembled from core-protein dimer precursors. *Proc. Natl. Acad. Sci. USA* 89:10046-10050.

27. **Seifer M, Zhou S, and Standring DN.** 1993. A micromolar pool of antigenically distinct precursors is required to initiate cooperative assembly of hepatitis B virus capsids in *Xenopus* oocytes. *J. Virol.* 67:249-257.

28. **Seifer M and Standring DN.** 1993. Recombinant human hepatitis B virus reverse transcriptase is active in the absence of the viral nucleocapsid or the viral replication origin, DR1. *J. Virol.* 67:4513-4520.

29. **Seifer M and Standring DN.** 1993. Stability governs the apparent expression of "particulate" hepatitis B e antigen by mutant hepatitis B virus core particles. *Virology* 196: 70-78.

30. **Chang C, Zhou S, Ganem D, and Standring DN.** 1994. Phenotypic mixing between different hepadnaviral nucleocapsid proteins reveals C protein dimerization to be cis-preferential. *J. Virol.* 68: 5225-5231.

31. **Seifer M and Standring DN.** 1994. A protease-sensitive hinge linking the two domains of the hepatitis B virus core protein is exposed on the viral capsid surface. *J. Virol.* 68: 5548-5555.

32. **Seifer M and Standring DN.** 1995. Assembly and antigenicity of hepatitis B virus core particles. *Intervirology* 38: 47-62.

33. **Seifer M and Standring DN.** 1995. Ribonucleoprotein complex formation by the human hepatitis B virus polymerase. *Intervirology* 38: 295-303.

34. **Hamatake R, Wang H-GH, Butcher JA, Bifano M, Clark G, Hernandez D, Zhang S, Racela J, Standring DN, and Colonna R.** 1996. Establishment of an *in vitro* assay to characterize hepatitis C virus NS3-4A protease trans-processing activity. *Intervirology* 39: 249-258.

35. **Innaimo SF, Seifer M, Bisacchi GS, Standring DN, Zahler R, and Colonna R.** 1997. Identification of BMS-200475 as a potent and selective inhibitor of hepatitis B virus. *Antimicrob. Agents Chemother.* 41: 1444-1448.

36. **Seifer M, Hamatake R, Bifano M, and Standring DN.** 1998. Generation of replication-competent hepatitis B virus nucleocapsids in insect cells. *J. Virol.* 72: 2765-2776.

37. **Seifer M, Hamatake R, Colombo R, and Standring DN.** 1998. *In vitro* inhibition of hepadnavirus polymerases by the triphosphates of BMS-200475 and lobucavir. *Antimicrob. Agents Chemother.* 42: 3200-3208.

38. **Genovesi EV, Lamb L, Medina I, Taylor D, Seifer M, Innaimo S, Colombo R, Standring DN, and Clark JM.** 1998. Efficacy of the carbocyclic 2'-deoxyguanosine nucleoside, BMS-200475, in the woodchuck model of hepatitis B virus infection. *Antimicrob. Agents Chemother.* 42: 3209-3217.

39. **Lau JYN and Standring DN.** 2000. Development of novel therapies for hepatitis C, p. 453-467. In: *Biomedical Research Reports: Hepatitis C.* Eds: T. J. Liang and J. Hoofnagle, NIH. Associated Press.

40. **Hong Z, Standring DN, Baroudy B and Lau JYN.** 2000. Development of novel anti-HCV therapies: HCV protease, helicase and polymerase as therapeutic targets. *Acta Gastroenterol Belg.* 63:210-212.

41. **Butkiewicz N, Yao N, Zhong W, Wright-Minogue J, Ingravallo P, Zhang R, Durkin J, Standring DN, Baroudy B, Sangar DV, Lemon SM, Lau JYN, and Hong Z.** 2000. Virus-specific cofactor requirement and chimeric hepatitis C virus/GB virus B nonstructural protein 3. *J. Virol.* 74:4291-4301.

42. **Standring DN, Bridges EG, Placidi L, Faraj A, Loi AG, Pierra C, Dukhan D, Gosselin G, Imbach J-L, Hernandez B, Juodawlkis A, Tenant B, Korba B, Cote P, Cretton-Scott E, Schinazi RF, Myers M, Bryant ML, and Sommadossi J-P.** 2001. Antiviral β -L-nucleosides specific for hepatitis B virus infection. *Antiviral Chemistry and Chemotherapy.* 12 (Suppl. 1): 119-129.

43. **Jeannot F, Gosselin G, Standring DN, Bryant M, Sommadossi J-P, Giulia Loi A, La Colla P, Mathe C.** 2002. Synthesis and studies of 3'-C-trifluoromethyl nucleoside analogues bearing adenine or cytosine as the base. *Bioorg Med Chem.* 10:3153-3161.

44. **Benzaria S, Pierra C, Bardiot D, Cretton-Scott E, Bridges EG, Zhou XJ, Standring DN, Gosselin G.** 2003. Monoval-LdC: efficient prodrug of 2'-deoxy- β -L-cytidine (L-dC), a potent and selective anti-HBV agent. *Nucleosides, Nucleotides Nucleic Acids.* 22:1003-1006.

45. **Pierra C, Benzaria S, Dukhan D, Loi AG, La Colla P, Bridges EG, Mao J, Standring DN, Sommadossi J-P, Gosselin G.** 2004. Synthesis, phyochemical and pharmacokinetic studies of potential prodrugs of β -L-2'-deoxycytidine, a selective and specific anti-HBV agent. *Antiviral Chem Chemother.* 15:269-279.

46. **Gosselin G, Pierra C, Benzaria S, Dukhan D, Imbach J-L, Loi A-G, La Colla P, Cretton-Scott E, Bridges EG, Standring DN and Sommadossi J-P.** 2004. β -L-2'-deoxythymidine (L-dT) and β -L-2'-deoxycytidine (L-dC): How simple structures can be potent, selective and specific anti-HBV drugs, p 309-317. *Frontiers I Nucleosides and Nucleic Acids*, IHL Press: Arlington, Massachusetts.

47. **Pierra C, Amador A, Benzaria S, Cretton-Scott E, D'Amours M., Mao J, Mathieu S, Moussa A., Bridges EG, Standring DN, Sommadossi J-P, Storer R, Gosselin G.** 2006. Synthesis and pharmacokinetics of valopicitabine (NM283), an efficient prodrug of the potent anti-HCV agent 2'-C-methylcytidine. *J. Med. Chem.* 49:6614-6620.

48. **Benzaria S, Bardiot D, Bouisset T, Counor C, Rabeson C, Pierra C, Storer R, Loi AG, Cadeddu A, Mura M, Musiu C, Liuzzi M, Loddo R, Bergelson S, Bichko V, Bridges E, Cretton-Scott E, Mao J, Sommadossi J-P, Seifer M, Standring DN, Tausek M, Gosselin G, La Colla P.** 2007. 2'-C-methyl branched pyrimidine ribonucleoside analogues: potent inhibitors of RNA virus replication. *Antiviral Chem & Chemother.* 18:225-242.

49. **Seifer M, Patty A, Serra I, Li B, Standring DN.** 2009. Telbivudine, a nucleoside analog inhibitor of HBV polymerase, has a different *in vitro* cross-resistance profile than the nucleotide analog inhibitors adefovir and tenofovir. *Antiviral Res.* 81(2):147-155.

50. **Seifer M, Patty A, Gosselin G, Sommadossi J-P, Standring DN.** *In vitro* studies on inhibitors of hepatitis B virus replication reveal differences in mechanism of action between telbivudine versus torcitabine or lamivudine. *Antimicrob. Agents Chemother., submitted.*

51. **Golitsina NL, Danehy FT, Fellows R, Cretton-Scott E, Standring DN.** 2009. Evaluation of the role of three candidate human kinases in the conversion of the hepatitis C virus inhibitor 2'-C-methyl-cytidine to its 5'-monophosphate metabolite. *Antiviral Res., submitted.*

ABSTRACTS SINCE 2001

1. **Juodawlkis A, Bridges EG, Cretton-Scott E, Standring DN, Benzaria S, Pierra C, Gosselin G, Imbach JL, Tenant B, Korba B, Sommadossi J-P, and Bryant ML.** Synergistic antiviral L-nucleosides specific for hepatitis B virus infection [Abstract]. *Antiviral Res* 2001;50:A43.

2. **Seifer M, Zhou F, Faraj A, Dukhan D, Gosselin G, Imbach JL, Pierra C, Benzaria S, Loi AG, Sommadossi J-P, Bryant ML, and Standring DN.** *In vitro* studies on the mechanism of action of L-nucleoside inhibitors of hepatitis B virus replication reveal differences between LdT and lamivudine [Abstract]. *Hepatology* 2001; 34 (4 Pt. 2):635A.

3. **Pierra C, Benzaria S, Dukhan D, Loi AG, La Colla P, Bridges E, Mao J, Standring D, Sommadossi J-P and Gosselin G.** Synthesis and study of some

derivatives of beta-L-2'-deoxycytidine, a potent, selective and specific anti-HBV agent [Abstract]. XIV International Conference on Antiviral Research 2001.

4. **Seifer M, Patty A, Faraj A, Dukhan D, Gosselin G, Imbach JL, Pierra C, Benzaria S, Loi AG, La Colla P, Sommadossi J-P, Bryant ML, and Standing DN.** *In Vitro* studies on the mechanism of action of L-nucleoside inhibitors of hepatitis B virus replication reveal differences between LdT and lamivudine [Abstract]. Antiviral Res 2001;HepDart Abstracts:82.

5. **Benzaria S, Pierra C, Bardiot D, Cretton-Scott EM, Bridges EG, Zhou X-J, Standing DN, Storer R, and Gosselin G.** Monoval-LdC: Efficient prodrug of 2'-deoxy-beta-L-cytidine (L-dC) a potent and selective anti-HBV agent [Abstract]. XV International Round Table: Nucleosides, Nucleotides and Nucleic Acids. Leuven, Belgium; 2002.

6. **Pierra C, Benzaria S, Bardiot D, Cretton-Scott EM, Bridges EG, Zhou X-J, Standing DN, and Gosselin G.** Synthesis and comparative study of valinyl ester prodrugs of the L-enantiomer of deoxycytidine, a potent and selective anti-HBV agent [Abstract]. 1st International meeting on Medicinal & Pharmaceutical Chemistry (IMMPC-1). Grazi University, Ankara, Turkey; 2002.

7. **Benzaria S, Dukhan D, Faraj A, Imbach JL, Pierra C, Bridges EG, Cretton-Scott EM, Standing DN, Zhou X-J, Sommadossi J-P, and Gosselin G.** L-enantiomers of natural 2'-deoxynucleosides revisited: L-dT and L-dC as potent and selective anti-HBV drugs. 1st International Meeting on Medicinal and Pharmaceutical Chemistry (IMMPC-1). Grazi University, Ankara, Turkey; 2002.

8. **Dukhan D, Loi AG, La Colla P, Gosselin G, Standing DN, and Sommadossi J-P.** 1'-C-methyl-beta-D-ribouranosyl pyrimidine nucleosides revisited: synthesis and biological evaluation [Abstract]. XV International Round Table: Nucleosides, Nucleotides and Nucleic Acids. Leuven, Belgium; 2002.

9. **Standing DN, Lanford R, Wright T, Chung RT, Bichko V, Cretton-Scott EM, Pan-Zhou X-R, Bergelson S, Qu L, Tausek M, Bridges EG, Moussa A, Storer R, Pierra C, Benzaria S, Gosselin G, La Colla P, and Sommadossi J-P.** NM283 has potent antiviral activity against chronic hepatitis C virus genotype 1 infection in the chimpanzee [Abstract]. 11th Triennial Symposium on Viral Hepatitis & Liver Disease, 6-10 April 2003, Sydney.

10. **Standing DN, Lanford R, Wright T, Chung RT, Bichko V, Cretton-Scott EM, Pan-Zhou X-R, Bergelson S, Qu L, Tausek M, Bridges EG, Moussa A, Storer R, Pierra C, Benzaria S, Gosselin G, La Colla P, and Sommadossi J-P.** NM283 has potent antiviral activity against genotype 1 chronic hepatitis C virus (HCV-1) infection in the chimpanzee [Abstract]. J Hepatol 2003;38(suppl. 2):3.

11. **Standring DN**. Treatment of HBV and HCV with novel antiviral agents [Abstract]. 9th International Antiviral Symposium and Workshop, 9-11 November 2003, Antalya, Turkey.
12. **Standring DN, Lanford R, Wright T, Chung RT, Bichko V, Cretton-Scott EM, Pan-Zhou X-R, Bergelson S, Qu L, Tausek M, La Colla M, Anand V, Mao J, Bridges EG, Moussa A, Chaudhuri N, Storer R, Pierra C, Benzaria S, Gosselin G, Shlaes D, La Colla P, and Sommadossi J-P.** NM283 has potent antiviral activity against chronic hepatitis C virus genotype 1 in the chimpanzee [Abstract]. HepDart Abstracts 2003.
13. **Pierra C, Benzaria S, Dukhan D, Imbach JL, Standring DN, Sommadossi J-P, and Gosselin G**. Nucleoside analogues as chemotherapeutic antiviral agents [Abstract]. Developments in Nucleic Acids 2003 Abstracts.
14. **Bergelson S, Benzaria S, Gosselin G, Storer R, Sommadossi J-P, and Standring DN**. The triphosphate form of NM107 inhibits BVDV NS5B polymerase *in vitro* and leads to chain termination of RNA synthesis [Abstract]. 11th International Symposium on Hepatitis C and Related Viruses, 3-7 October 2004, Heidelberg, Germany.
15. **Bichko V, Tausek MM, Qu L, LaColla M, Pierra C, Storer R, Gosselin G, Sommadossi J-P, and Standring DN**. Enhanced antiviral activity of NM107 in combination with interferon alfa [Abstract]. 11th International Symposium on Hepatitis C and Related Viruses, 3-7 October 2004, Heidelberg, Germany.
16. **Bichko V, Tausek MM, Qu L, LaColla M, Bergelson S, Pierra C, Benzaria S, Storer R, Gosselin G, Sommadossi J-P, and Standring DN**. Enhanced antiviral activity of NM107, alone or in combination with interferon alfa [Abstract]. J Hepatol 2005;42 Suppl.2:154.
17. **Bichko V, Tausek MM, Qu L, LaColla M, Bergelson S, Pierra C, Benzaria S, Storer R, Gosselin G, Sommadossi J-P, and Standring DN**. NM283 (valopicitabine) and interferon alfa act synergistically against bovine viral diarrhea virus *in vitro* [Abstract]. 12th International Symposium on Hepatitis C and Related Viruses, 2-6 October 2005, Montreal, Canada.
18. **Bichko V, Qu L, LaColla M, Tausek MM, Bergelson S, Pierra C, Storer R, Gosselin G, Sommadossi J-P, and Standring DN**. NM283 (valopicitabine) resistance in the bovine viral diarrhea virus *in vitro* infection model [Abstract]. 12th International Symposium on Hepatitis C and Related Viruses, 2-6 October 2005, Montreal, Canada.
19. **Bichko V, Qu L, LaColla M, Tausek MM, Bergelson S, Pierra C, Storer R, Gosselin G, Sommadossi J-P, and Standring DN**. Characterization of NM283 (valopicitabine) resistance profile using bovine viral diarrhea virus [Abstract]. Hepatology 2005; 42 (4 Suppl. 1):534A.

20. Seifer M, Patty A, Dukhan D, Gosselin G, Imbach JL, Sommadossi J-P, Bryant ML, and Standring DN. Telbivudine (LdT) preferentially inhibits second (+) strand HBV DNA synthesis [Abstract]. Journal of Hepatology 2005; 42 Suppl.2:151.

21. Seifer M, Patty A, Dukhan D, Gosselin G, Imbach JL, Sommadossi J-P, Bryant ML, and Standring DN. Telbivudine (LdT) preferentially inhibits second (+) strand HBV DNA synthesis [Abstract]. Gastroenterology 2005; 128 (4 Pt.1):A742-A743.

22. Seifer M, Patty A, Dukhan D, Gosselin G, Imbach JL, Sommadossi J-P, Bryant ML, and Standring DN. Telbivudine (LdT) preferentially inhibits second (+) strand HBV DNA synthesis [Abstract]. APASL abstracts 2005.

23. Bichko V, LaColla M, Tausek MM, Lallos L, Gillum J, Qu L, Sommadossi J-P, and Standring DN. Long-term study of NM283 (valopicitabine) resistance using bovine viral diarrhea virus [Abstract]. J Hepatol 2006;44 Suppl. 2:S152.

24. Bichko V, LaColla M, Tausek MM, Lallos L, Gillum J, Qu L, Sommadossi J-P, and Standring DN. NS5B mutations associated with NM283 (valopicitabine) resistance in bovine viral diarrhea virus [Abstract]. American Society for Virology 2006.

25. Bichko V, Lallos L, Soubasakos M, LaColla M, Tausek MM, Gillum J, Sommadossi J-P, and Standring DN. NM283 (valopicitabine) resistance and cross-resistance in HCV and BVDV *in vitro* [Abstract]. 13th Int'l Symposium on Hepatitis C & Related Viruses 2006;169.

26. Standring DN, Seifer M, Patty A, Chapron C, Van Doorn LJ, Chao G, Brown NA, and Lai CL. HBV resistance determination from the telbivudine GLOBE registration trial [Abstract]. J. Hepatol. 2006;44 Suppl. 2:S191.

27. Cooksley H, Hou JL, Vitek L, Urbanek P, Abbott W, Gane E, Hofmann P, Zeuzem S, Wedemeyer H, Buti M, Standring DN, Chao G, Brown N, and Naoumov N. Impact of nucleoside treatment on antiviral T-cell reactivity in chronic hepatitis B: major differences depending on early viral suppression, HBeAg status and HBV genotype [Abstract]. Annual Meeting of the British Association for the Study of the Liver, 7-8 September 2006, Dublin.

28. Golitsina N, Danehy G, Fellows R, Patty A, Serra I, Seifer M, and Standring DN. Phosphorylation of telbivudine by three enzymes: implications for anti-hepatitis B virus activity *in vitro* and in the clinic [Abstract]. Hepatology 2006; 44 (4 Suppl. 1):561A.

29. Cooksley H, Hou JL, Vitek L, Urbanek P, Abbott W, Gane E, Hofmann P, Zeuzem S, Wedemeyer H, Buti M, Standring DN, Chao G, Brown N, and Naoumov NV. Impact of nucleoside treatment on antiviral T-cell reactivity in chronic hepatitis B: major impact of early viral suppression, HBeAg status and HBV genotype [Abstract]. Hepatology 2006; 44 (4 Suppl. 1):547A.

30. **Bichko V, Lallos L, Soubasakos M, LaColla M, Tausek MM, Gillum J, and Standring DN.** Valopicitabine (NM283) is fully active against known HCV protease resistance mutations *in vitro* [Abstract]. EASL, 11-15 April 2007, Barcelona, Spain.

31. **Riva A, Cooksley H, Hou J, Vitek L, Urbanek P, Wedemeyer H, Manns M, Abbott W, Gane E, Hofmann P, Zeuzem S, Buti M, Standring DN, Chao G, Brown N, and Naoumov N.** Effector/memory subsets and functionality of CD4/CD8+ t-cells during potent antiviral therapy in chronic hepatitis B (CHB) [Abstract]. J Hepatol. 2007;46(suppl. 1):S43-44.

32. **Seifer M, Patty A, Chapron C, Van Doorn LJ, Belanger B, Brown N, and Standring DN.** Genotypic analysis of patients with evaluable HBV DNA after 1 year of telbivudine therapy in the GLOBE registration trial [Abstract]. Gastroenterology 2007; 132 (4 Suppl 2):A729.

33. **Standring DN, Patty A, Chapron C, Van Doorn LJ, Belanger B, Brown N, and Seifer M.** Resistance determination in patients experiencing virologic breakthrough following telbivudine or lamivudine therapy in the international GLOBE trial [Abstract]. Gastroenterology 2007; 132 (4 Suppl 2):A766.

34. **Richman DD, Jakubik J, Chapron C, Hubbard L, Gray L, Seifer M, and Standring DN.** Genotypic resistance and phenotypic cross-resistance profile *in vitro* for a novel NNRTI: IDX899 [Abstract]. 15th Conference on Retroviruses and Opportunistic Infections; February 3-6, 2008, Boston, MA.

35. **Cretton-Scott E, Perigaud C, Peyrottes S, Licklider L, Camire M, Larsson M, La Colla M, Hildebrand E, Lallos LB, Bilello JP, McCarville J, Seifer M, Liuzzi M, Pierra C, Badaroux E, Gosselin G, Surleraux D and Standring DN.** *In vitro* antiviral activity and pharmacology of IDX184, a novel and potent inhibitor of HCV replication [Abstract]. 43rd Annual Meeting of the European Association for the Study of Liver; April 23-27, 2008, Milan, Italy.

36. **Lallos LB, La Colla M, Soubasakos MA, Hildebrand E, Serra I, Li B, Panzo RJ, Seifer M, and Standring DN.** Enhanced antiviral activity of IDX184 in combination with IFN- α , RBV or an IDX PI in the HCV replicon model [Abstract]. 15th International Symposium on Hepatitis C Virus & Related Viruses; October 5-9, 2008, San Antonio, TX.

37. **Standring DN, Lanford R, Cretton-Scott E, Licklider L, Larsson M, Pierra C, Gosselin G, Perigaud C, Surleraux D, Mayers B, Moussa A and Selden J.** 2008. Potent antiviral activity of second generation nucleoside inhibitors, IDX102 and IDX184, in HCV-infected chimpanzees [Abstract]. J. Hepatol. 48:S30.

38. **Bilello JP, Standring DN, Dousson C, Griffon J-F, La Colla M, Lallos LB, Liuzzi M, Loi A-G, McCarville J, Paparin J-L, Pierra C, Roland A, Seifer M, and Surleraux D.** *In vitro* activity and pharmacological properties of IDX375, a novel HCV

non-nucleoside inhibitor [Abstract]. 59th Annual AASLD Meeting, October 31-November 4, 2008, San Francisco, CA.

39. **Lallos LB, Bilello JP, Soubasakos MA, Gillum J, La Colla M, Serra I, Liuzzi M, McCarville J, Seifer M, Good SS, Larsson M, Selden J, Parsy C, Surleraux D and Standring DN.** Preclinical profiles of IDX136 and IDX316, two novel macrocyclic HCV protease inhibitors [Abstract]. 44th Annual Meeting of the European Association for the Study of Liver; April 22-26, 2009, Copenhagen, Denmark.